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# **"UNCHAINING JUSTICE: BLOCKCHAIN TECHNOLOGY'S PIONEERING ROLE IN INDIAN ALTERNATIVE DISPUTE RESOLUTION"**

AUTHORED BY - MRUNMAI PRADEEP PIMPARKAR  
& TANVI BRIJESH SONAWANE

## **Introduction:**

In an era marked by unprecedented technological advancements, the traditional landscape of dispute resolution is undergoing a transformative shift. As the world navigates toward a digital future, blockchain technology has emerged as a disruptive force with the potential to revolutionize various sectors. In the Indian context, where alternative dispute resolution (ADR) mechanisms play a vital role in mitigating the burden on an already overburdened judicial system, the integration of blockchain technology presents a tantalizing prospect. This paper delves into the intricate web of possibilities that blockchain offers within the Indian ADR framework, exploring its manifold advantages, acknowledging the inherent shortcomings, and dissecting the intricate regulatory challenges that shroud its implementation.

The seamless interplay between blockchain technology and ADR introduces a fresh dimension to the age-old practice of conflict resolution. By leveraging decentralized ledgers, smart contracts, and cryptographic principles, this union holds the promise of efficiency, transparency, and trustworthiness. However, every innovation is a double-edged sword, and blockchain is no exception. While the transformative potential is awe-inspiring, it is equally vital to dissect the limitations and regulatory hurdles that must be surmounted for a harmonious amalgamation of blockchain and ADR. This paper, authored with deep insight into the Indian legal and technological landscape, also offers a set of pragmatic recommendations for the Indian government to navigate this uncharted territory effectively. By understanding how blockchain technology can shape the future of ADR in India, we hope to inspire a robust discourse, foster innovation, and lay the groundwork for an efficient and equitable dispute resolution mechanism that upholds the highest standards of justice.

## WHAT IS BLOCKCHAIN?

Blockchain is a type of technology that involves the distribution of a ledger. This ledger contains transactions known as blocks. These blocks are linked in the form of a chain (hence “blockchain”) in such a way that it is updated in every transaction.<sup>1</sup> Additionally, because of the cryptography used, it is impossible to alter or modify any records.

The conception of blockchain was popularized by Satoshi Nakamoto, through his Bitcoin White Paper.<sup>2</sup> Bitcoin, launched in 2009 on the Bitcoin blockchain, was the first cryptocurrency and popular application to successfully use blockchain.<sup>3</sup> As a result, blockchain has been most often associated with Bitcoin and alternatives such as Dogecoin and Bitcoin Cash, which both use public ledgers.

However, the use of private ledger blockchains has expanded to other applications since Bitcoin's inception. Logistics companies use blockchain to track and trace goods as they move through the supply chain.<sup>4</sup> Government central banks and the global financial community have been testing blockchain technology as a foundation for currency exchange.<sup>5</sup> And various industries, including the legal community and entertainment, are using blockchain as the basis for smart contracts and other mechanisms for transferring and protecting intellectual property rights.<sup>6</sup> To speed transactions, a set of rules — called a smart contract — is stored on the blockchain and executed automatically. A smart contract can define conditions for corporate bond transfers, include terms for travel insurance to be paid and much more.<sup>7</sup>

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<sup>1</sup> IBM, ‘What is Blockchain technology?’, <https://www.ibm.com/topics/blockchain>

<sup>2</sup> What is ‘Block chain’, *The Economic Times* (14<sup>th</sup> October, 2023), <https://economictimes.indiatimes.com/definition/block-chain>

<sup>3</sup> Julie Pinkerton, ‘The History of Bitcoin, the First Cryptocurrency’, (7 August, 2023), <https://money.usnews.com/investing/articles/the-history-of-bitcoin#:~:text=Bitcoin%20was%20the%20first%20cryptocurrency,identity%20has%20never%20been%20verified>

<sup>4</sup> Vishal Gaur and Abhinav Gaiha, ‘Building a Transparent Supply Chain’, *Harvard Business Review* (May-June 2020), <https://hbr.org/2020/05/building-a-transparent-supply-chain>

<sup>5</sup> Rella, L. (2019), ‘Blockchain technologies and remittances: From financial inclusion to correspondent banking front Blockchain’, doi:10.3389/fbloc.2019.00014

<sup>6</sup> David Mhlanga, ‘Block chain technology for digital financial inclusion in the industry 4.0, towards sustainable development?’, Vol 6- 2023, <https://www.frontiersin.org/articles/10.3389/fbloc.2023.1035405/full#B33> )

<sup>7</sup> IBM, ‘What are smart contracts on blockchain?’, <https://www.ibm.com/topics/smart-contracts>

## FEATURES OF BLOCKCHAIN

### 1. Immutability

Immutability, an essential characteristic of blockchain technology, denotes its innate resistance to change, making it a foundational and pivotal element. Blockchain technology offers a distinct advantage by ensuring the perpetuity and inalterability of its network. Notably, one of the key features of blockchain is the creation of immutable ledgers, a clear departure from centralized databases susceptible to fraud and security breaches due to their reliance on third-party intermediaries.<sup>8</sup>

This aspect of blockchain relies on its nodes. The functionality of blockchain hinges on a network of these nodes, each representing an individual machine running blockchain software. These nodes are responsible for verifying and preserving the complete transaction history within the network.<sup>9</sup> Blockchain integration projects, such as this pilot program in Colombia, conclude that “blockchain-based e-procurement systems provide unique benefits related to procedural transparency, permanent record-keeping, and honest disclosure.”<sup>10</sup>

In addition, inefficiencies in land titling systems are a significant source of corruption. As a result, several countries, including Honduras, Brazil, and Ghana, have proposed blockchain-based land registries.<sup>11</sup> Georgia registered over 1.5 million land titles using its blockchain-based system in 2018.<sup>12</sup>

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<sup>8</sup> WIPO, ‘Blockchain technologies and IP ecosystems: A WIPO white paper’, [2022], <https://www.wipo.int/export/sites/www/cws/en/pdf/blockchain-for-ip-ecosystem-whitepaper.pdf>

<sup>9</sup> Niki Wiles, ‘The Radical Potential of Blockchain Technology’, 6-6-2015, <https://www.sconline.com/blog/post/2022/04/25/smart-contracts-and-blockchain-arbitration-smart-solutions-paving-the-way-for-a-better-dispute-resolution-mechanism/>

<sup>10</sup> Mathew Niekerk, ‘How blockchain can help dismantle corruption in government services’, August 27, 2022, <https://www.thepeninsula.org.in/2022/08/27/how-blockchain-can-help-dismantle-corruption-in-government-services/?print=print#:~:text=Projects%20integrating%20blockchain%20into%20procurement,several%20drawbacks%2C%20such%20as%20scalability>

<sup>11</sup> Patrick Mutabazi, ‘Blockchain Based Land Registries - How Technology Can be Used For Land Registration’, 7 May, 2021, <https://www.linkedin.com/pulse/blockchain-based-land-registries-how-technology-can-mutabazi>

<sup>12</sup> Qiuyun Shang, Allison Price, ‘A Blockchain-Based Land Titling Project in the Republic of Georgia: Rebuilding Public Trust and Lessons for Future Pilot Projects’, January 2019, [https://www.researchgate.net/publication/330069648\\_A\\_Blockchain-Based\\_Land\\_Titling\\_Project\\_in\\_the\\_Republic\\_of\\_Georgia\\_Rebuilding\\_Public\\_Trust\\_and\\_Lessons\\_for\\_Future\\_Pilot\\_Projects](https://www.researchgate.net/publication/330069648_A_Blockchain-Based_Land_Titling_Project_in_the_Republic_of_Georgia_Rebuilding_Public_Trust_and_Lessons_for_Future_Pilot_Projects)

## 2. Decentralized

Within a blockchain, there exists no single entity or organization in charge of governing the structure. Instead, decentralization prevails, as an array of nodes collectively uphold the network.<sup>13</sup> This pivotal characteristic of blockchain technology underscores its disruptive potential, serving as a compelling alternative to centralized systems. The blockchain empowers users by placing them in a position of clear authority. This facet of blockchain technology offers significant advantages, allowing individuals to readily access the system via the internet and securely store their assets, devoid of any need for regulatory oversight or reliance on third-party intermediaries.

## 3. Enhanced Security

The absence of a central authority or intermediaries in blockchain technology ensures that no individual node can manipulate the blockchain's attributes or records for personal gain.<sup>14</sup> To enhance the system's security, an extra layer of safeguarding is implemented through encryption, encompassing hashing and cryptography techniques. Any endeavour to modify data within a blockchain necessitates a substantial computational effort before the broader network can respond, thereby fortifying the system's integrity.

This underscores the formidable challenge hackers face in attempting to breach and undermine the network. The consensus mechanism in blockchain adds an extra layer of security. Every record within the blockchain is individually encrypted, fortifying the overall security of the network. Blockchain technology offers a safer environment for users compared to the current state of the internet (Web 2.0).<sup>15</sup>

## 4. Faster Settlement

Blockchain technology accelerates transaction settlements when compared to conventional banking systems, streamlining processes globally. By eliminating

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<sup>13</sup> Niti Aayog, 'Blockchain: The India Strategy, Arnab Kumar', Tanay Mahindru, Punit Shukla and Aalekh Sharan, January 2020, [https://punjab.gov.in/wp-content/uploads/2021/07/Blockchain\\_The\\_India\\_Strategy\\_Part\\_I.pdf](https://punjab.gov.in/wp-content/uploads/2021/07/Blockchain_The_India_Strategy_Part_I.pdf)

<sup>14</sup> MDPI, 'Blockchain Technology: Benefits, Challenges, Applications, and Integration of Blockchain Technology with Cloud Computing', Gousia Habib, Sparsh Sharma, Sara Ibrahim, Imtiaz Ahmad, Shaima Qureshi, Malik Ishfaq, 21 November 2022, <https://www.mdpi.com/1999-5903/14/11/341>

<sup>15</sup> Elsevier, 'Blockchain-based recommender systems: Applications, challenges and future opportunities', Yassine Himeur, Aya Sayed, Abdullah Alsalemi, Faycal Bensaali, Abbas Amira, Iraklis Varlamis, Magdalini Eirinaki, Christos Sardianos, George Dimitrakopoulos, Volume 43 February 2022, <https://www.sciencedirect.com/science/article/pii/S1574013721000769>

intermediaries, it enhances transactional efficiency and speed. For instance, Ripple facilitates real-time settlements for numerous global banks. The transparency, trustworthiness, and tamper-proof features have spurred various applications such as Bitcoin and Ethereum. Blockchain plays a pivotal role in enhancing the security, efficiency, and effectiveness of business and government procedures.<sup>16</sup>

## 5. Unanimous

Public blockchains, owing to their decentralized structure, require network participants to reach a consensus on the shared blockchain state. When all network nodes unanimously agree, it produces a single blockchain comprising validated data (transactions) deemed accurate by the network.<sup>17</sup>

## 6. Transparency

This technology empowers traceable and immutable transactions, enabling parties to engage in trade with full confidence, free from the need for intermediaries.<sup>18</sup>

## 7. Distributed

Full transparency is ensured as all network participants possess a ledger copy. A public ledger contains comprehensive information about all network participants and their transactions. The distribution of computational power across various computers enhances overall performance.<sup>19</sup> When a user wishes to add a new block, it necessitates verification by other participating nodes. Approval from a majority of nodes is a prerequisite for adding a new block to the blockchain network. In a blockchain network, there's a strict adherence to a standard procedure, with no node receiving special privileges or preferential treatment.<sup>20</sup>

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<sup>16</sup> 'Features of Blockchain' 14 March 2023, <https://www.geeksforgeeks.org/features-of-blockchain/>

<sup>17</sup> 'Blockchain Forks', 4 April 2023, <https://www.geeksforgeeks.org/blockchain-forks/>

<sup>18</sup> IBM, 'What is blockchain technology?', <https://www.ibm.com/topics/blockchain#:~:text=Blockchain%20is%20ideal%20for%20delivering,accounts%2C%20production%20and%20much%20more>

<sup>19</sup> IBM, 'What is blockchain technology?', <https://www.ibm.com/topics/blockchain#:~:text=Blockchain%20is%20ideal%20for%20delivering,accounts%2C%20production%20and%20much%20more>

<sup>20</sup> MDPI, 'Blockchain Technology: Benefits, Challenges, Applications, and Integration of Blockchain Technology with Cloud Computing', Gousia Habib, Sparsh Sharma, Sara Ibrahim, Imtiaz Ahmad, Shaima Qureshi, Malik Ishfaq, 21 November 2022, <https://www.mdpi.com/1999-5903/14/11/341>

## IS CRYPTO LEGAL?

The crypto economy, within the blockchain network, diverges from traditional transaction norms, necessitating innovative dispute resolution methods. This entails adapting regulations to the code-driven blockchain environment, including the use of smart contracts in blockchain arbitration.<sup>21</sup> Some jurisdictions, like Mexico, are progressing in harmonizing traditional and blockchain dispute resolution.<sup>22</sup> As previously explained, smart contracts consist of coded contractual clauses embedded in the blockchain, ensuring automatic enforcement of parties' rights and obligations. Public blockchain networks like Ethereum make use of robust and unchangeable smart contracts in transactions involving digital currencies.<sup>23</sup>

Section 10 of the Contract Act states that agreements become contracts when they involve willing consent, lawful consideration, and a clear purpose.<sup>24</sup> In simpler terms, an agreement must include an offer, acceptance, and consideration to be legally enforceable under the Contract Act. Section 2(d) of the Contract Act necessitates reciprocal promises or actions from the promisee for consideration to be valid.<sup>25</sup> Notably, the Supreme Court of India, in the case of *Internet and Mobile Association of India v. Reserve Bank of India*, lifted the ban imposed by the Reserve Bank of India on cryptocurrencies. This ban had prevented banks and financial institutions from offering services to individuals or businesses involved in cryptocurrency transactions.<sup>26</sup> This development affirms that cryptocurrencies constitute valid consideration and has paved the way for a pro-blockchain arbitration environment in India, primarily through the use of smart contracts.

Section 10A of the Information Technology Act, 2000, validates contracts formed electronically.<sup>27</sup> Electronic means are defined as those used to create an "electronic record," encompassing data, records, images, or sounds stored, received, or transmitted in electronic

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<sup>21</sup> Parma Bains, Arif Ismail, Fabiana Melo, and Nobuyasu Sugimoto, 'Regulating the Crypto Ecosystem: The Case of Stablecoins and Arrangements', 26 September 2022, <https://www.elibrary.imf.org/view/journals/063/2022/008/article-A001-en.xml>

<sup>22</sup> Aseem Chaturvedi and Trishala Trivedi, 'India: The Blockchain Arbitral Order: An Indian Perspective', 16 June 2023, <https://www.mondaq.com/india/arbitration--dispute-resolution/1330488/the-blockchain-arbitral-order-an-indian-perspective>

<sup>23</sup> BIS, 'Cryptocurrencies and Decentralized Finance', Igor Makarov and Antoinette Schoar, December 2022, <https://www.bis.org/publ/work1061.pdf>

<sup>24</sup> Indian Contract Act, 1872, § 10

<sup>25</sup> Indian Contract Act, 1872, § 2(d)

<sup>26</sup> *Internet & Mobile Assn. of India v. RBI*, (2020) 10 SCC 274

<sup>27</sup> Information Technology Act, 2000, § 10A

form.<sup>28</sup> Smart contracts comprise a series of electronic records transmitted and stored by parties, falling within this definition of "electronic means." Consequently, it can be inferred that blockchain arbitration agreements would be valid under the amended Section 7 of the Arbitration and Conciliation Act.<sup>29</sup> The applicability of the Amendment Act to specific proceedings would depend on the commencement date of those proceedings.<sup>30</sup>

Post proceedings which are initiated after the passing of the arbitral award. In this regard, attention is drawn to Sections 33 and 34 of the Arbitration Act, which deal with correction and interpretation of arbitral award (including the making of additional awards) and applications for setting aside arbitral awards.<sup>31</sup>

A noteworthy disparity exists between arbitral awards issued in blockchain arbitration proceedings and post-arbitral proceedings. When an arbitral award is rendered within the blockchain framework, the smart contract automatically enacts the coded actions. Importantly, this process doesn't permit modifications, corrections, or interpretations of the award as allowed under Section 33 of the Arbitration Act, as contract performance precedes any potential challenge.<sup>32</sup> Furthermore, the automated execution of smart contracts linked to the arbitral award leaves no room to set aside the award, infringing upon party autonomy. However, it's worth noting that the Act permits the presentation of "duly certified" copies of the original award to the Court. In a blockchain system, it's practically impossible to alter a copy of the arbitration award, making a copy from the blockchain inherently duly certified.<sup>33</sup>

## SMART CONTRACTS

A smart contract is a computer protocol on the blockchain that digitally facilitates, verifies, and enforces contracts.<sup>34</sup> These contracts, embedded as code, execute automatically when predefined conditions are met. They streamline the contract process, providing certainty to all parties

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<sup>28</sup> Information Technology Act, 2000, § 2(1)(t)

<sup>29</sup> The Arbitration and Conciliation Act, 1996, § 7

<sup>30</sup> Anu Shrivastava, 'BCCI v. Kochi – (Un)tangled Issues?', *Kluwer Arbitration Blog*, 16 October 2018, <https://arbitrationblog.kluwerarbitration.com/2018/10/16/bcci-v-kochi-untangled-issues/>

<sup>31</sup> The Arbitration and Conciliation Act, 1996, § 33 & 34

<sup>32</sup> The Arbitration and Conciliation Act, 1996, § 33

<sup>33</sup> Dena Givari, 'How Does Arbitration Intersect with the Blockchain Technology that underlies Cryptocurrencies?', *Kluwer Arbitration Blog*, May 5 2018, <https://arbitrationblog.kluwerarbitration.com/2018/05/05/scheduled-blockchain-arbitration-april-17-2018/>

<sup>34</sup> Hamed Taherdoost, 'Smart Contracts in Blockchain Technology: A Critical Review', *MDPI*, 13 February 2023, <https://www.mdpi.com/2078-2489/14/2/117>

without intermediaries or delays.<sup>35</sup>

Smart contracts, being digital agreements, encompass offer and acceptance using cryptocurrencies, such as Ethereum. This primarily represents agreement to the terms and conditions of a service platform facilitating transactions. An important concern is whether the Contract Act would recognize cryptocurrencies like Ethereum as valid consideration, a matter that remains disputed in India due to the absence of relevant regulations.<sup>36</sup>

It's important to clarify that smart contracts differ from cryptocurrencies and legal contracts. While cryptocurrencies and smart contracts both leverage blockchain technology, they serve different purposes. For example, a bitcoin exists but only gains utility when transferred, facilitated by the blockchain platform. Similarly, smart contracts contain "if-then" instructions understood by computers, but the blockchain enables consumers to practically apply this capability by connecting them on a trusted and unchangeable network.<sup>37</sup>

## **ALTERNATIVE DISPUTE RESOLUTION(ADR)-**

Alternative Dispute Resolution (ADR) offers a modern approach to resolving various disputes, spanning civil, commercial, industrial, and family matters, especially when parties struggle to initiate negotiations and reach settlements independently.<sup>38</sup> ADR typically involves a neutral third party facilitating communication and dispute resolution. Section 89 of the Civil Procedure Code, 1908, enables courts to explore potential settlements outside of court through methods like arbitration, conciliation, mediation, or Lok Adalat.<sup>39</sup>

Shortly before the middle of the eighteenth century, Sir Robert Raymond C.J. was held to have stated: "An arbitrator is a private extraordinary judge between party and party, chosen by their

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<sup>35</sup> IBM, 'What are Smart Contracts on Blockchain?', [https://www.sconline.com/blog/post/2022/04/25/smart-contracts-and-blockchain-arbitration-smart-solutions-paving-the-way-for-a-better-dispute-resolution-mechanism/](https://www.ibm.com/topics/smart-contracts#:~:text=Smart%20contracts%20are%20simply%20programs,intermediary's%20involvement%20or%20time%20loss; 'Smart Contracts and Blockchain Arbitration: Smart Solutions Paving the Way for a Better Dispute Resolution Mechanism', Hiroo Advani, Asif Lampwala and Ria Garg, 25 April 2022, <a href=)

<sup>36</sup> RBI 2017 Notification, <https://www.rbi.org.in/Scripts/NotificationUser.aspx?Id=11243>

<sup>37</sup> Dena Givari, 'How Does Arbitration Intersect with the Blockchain Technology that underlies Cryptocurrencies?', Kluwer Arbitration Blog, May 5 2018, <https://arbitrationblog.kluwerarbitration.com/2018/05/05/scheduled-blockchain-arbitration-april-17-2018/>

<sup>38</sup> Laxmi Jagdish, 'ALTERNATIVE DISPUTE RESOLUTION AND ITS ROLE IN COMPANIES', 25-04-2021, <https://dejure nexus.com/alternative-dispute-resolution-and-its-role-in-companies/>

<sup>39</sup> 'What is Alternative Dispute Order?', *Times of India*, 27 February 2023, <https://timesofindia.indiatimes.com/readersblog/lawpedia/what-is-alternative-dispute-order-50952/>

mutual consent, to determine controversies between them. And arbitrators are so called because they have an arbitrary power; for if they observe the submission (arbitration agreement) and keep within due bounds, their sentences are definite from which there lies no appeal.”<sup>40</sup>

The Objects of the Arbitration & Conciliation Act, 1996 (in lines with UNCITRAL Model Law and Rules) are:<sup>41</sup>

- i. to comprehensively cover international as also domestic arbitration and conciliation;
- ii. to provide an arbitral procedure which is fair, efficient and capable of meeting the needs of the specific arbitration;
- iii. to provide that the Arbitral Tribunal shall give reasons for its arbitral award;
- iv. to define the limit of jurisdiction of Arbitral Tribunal;
- v. to minimise the supervisory role of Courts in the arbitral process;
- vi. to permit an Arbitral Tribunal to use mediation and conciliation during the arbitral proceedings;
- vii. to provide that the award is enforced in the same manner as if it were a decree of the Court;
- viii. to provide that a settlement agreement signed by both parties and conciliator as a result of conciliation will have the same status and effect as an arbitral award;
- ix. to provide that every arbitral award made in a country to which one of the two international Conventions relating to foreign arbitral awards to which India is a party applies, will be treated as a foreign award and enforced as a decree.

The object of the Act is to provide speedy and alternative solution to the disputes and to avoid protracted litigation.<sup>42</sup>

## IMPORTANCE OF ARBITRATION IN INDIA

*Firstly*, it is a faster and more efficient way of resolving disputes compared to litigation. In India, the judicial system is overburdened, and cases can take years to be resolved. However, arbitration proceedings are resolved within 6-12 months, which makes it a more efficient way of resolving

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<sup>40</sup> William H. Gill, *Evidence and Procedure in Arbitration*, 1 (1965), Justice R S Bachawat, *Bachawat: Arbitration and Conciliation*, 6<sup>th</sup> edition (2017)

<sup>41</sup> C R Datta, *Law of Arbitration & Conciliation*, 7<sup>th</sup> edition (2017)

<sup>42</sup> Fuerst Day Lawson Ltd. v. Jindal Exports Ltd. AIR 2001 SC 2293 [LNIND 2001 SC 1180]: (2001) 6 SCC 356 [LNIND 2001 SC 1180].

disputes.<sup>43</sup>

**Secondly**, arbitration is a confidential process. Unlike litigation, the proceedings are not open to the public, and the details of the dispute are not disclosed to the media or the public. This confidentiality ensures that parties can protect their reputation and business interests.<sup>44</sup>

**Thirdly**, arbitration is a flexible process. Parties can choose the place and time of the arbitration, as well as the language in which the proceedings will be conducted. This flexibility ensures that parties can resolve their disputes in a way that is convenient and suitable for them.

**Fourthly**, arbitration is a cost-effective process. Compared to litigation, the costs of arbitration are significantly lower. This is because arbitration proceedings are less formal and streamlined, and parties do not have to pay for court fees or legal representation.<sup>45</sup>

The omnipresence of technology in arbitration and the application of the blockchain technology to dispute resolution mechanisms in the international arena led to the naissance of the 'blockchain arbitration'.<sup>46</sup>

## BLOCKCHAIN ARBITRATION

During a recent discussion about Compliance, Investigations, and White-Collar Crime, Richard Gibbon, a Partner at Squire Patton Boggs, discussed the increasing use of arbitration in the context of digital assets. Richard noted that there's a growing trend in dispute resolution involving digital assets, particularly in arbitration, and he offered several reasons for this;

**Firstly**, he pointed out that the term "crypto" implies secrecy, aligning with the pseudonymous nature of cryptocurrencies. Arbitration, with its emphasis on confidentiality, is well-suited for such cases.

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<sup>43</sup> UOI v Singh Builders Syndicate, (2009) 4 SCC 523 : (2009) 2 SCC (Civ) 246; NBCC Ltd v JG Engineers Pvt Ltd, (2010) 2 SCC 385 : AIR 2010 SC 640; NHAI v BSC-RBM-PATI (JV), 2018(4) RAJ 91 (Del)(DB)

<sup>44</sup> Dr P.C. Markanda: *Law Relating to Arbitration and Conciliation*, 10th edition [2020]

<sup>45</sup> Chief Engineer v Prakash Constructions, 2019(2) RAJ 694 (Mad).

<sup>46</sup> Thalia Kruger, 'Can Blockchain Arbitration become a proper 'International Arbitration'? Jurors vs. arbitrators', 22 May 2022, <https://conflictoflaws.net/2022/can-blockchain-arbitration-become-a-proper-international-arbitration-jurors-vs-arbitrators/>

*Secondly*, there's a natural connection between the decentralized nature of blockchain technology and the international scope of cryptocurrency disputes. This makes arbitration a neutral and fitting platform to resolve these disputes, unlike the courts of a single country.

*Lastly* the shift of administrative and supervisory control in blockchain from centralized associations to a distributed network aligns with the arbitration principle of party autonomy. This empowers participants to customize procedures, enhance efficiency, and reduce costs and time.<sup>47</sup> The Digital Dispute Resolution Rules (Digital DR Rules), introduced on April 22, 2021, after extensive consultation with legal, technical, and financial experts, outline an on-chain arbitration process for digital relationships and smart contracts.<sup>48</sup> The UK Jurisdictional Taskforce (UKJT) developed these rules.

Smart contracts are considered digital assets under the Digital DR Rules. To incorporate these rules into a blockchain-based smart contract, the contract should include the phrase "any dispute shall be resolved in accordance with UKJT Digital Dispute Resolution Rules," which can be included in code due to the nature of blockchain's coding.<sup>49</sup>

The Digital DR Rules allow for the resolution of disputes related to smart contracts without court involvement.<sup>50</sup> Disputes under these rules can be resolved through an automatic dispute resolution process or submitted to an arbitrator.

In the automatic dispute resolution process, parties can select a person, panel, or artificial intelligence agent to automatically decide disputes, with the decision immediately applied to the digital asset system. Rule 8 ensures the binding legality of the outcome.

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<sup>47</sup> Richard J. Gibbon, [https://urldefense.com/v3/\\_\\_https://www.squirepattonboggs.com/en/professionals/g/gibbon-richard\\_\\_;!!LBn7KyCY!VrITqeF46wdW5lQmjE2jt2\\_94LRpGhOehk\\_3NlF5GjnRsjtFPfvb2nIrWryPnloxKeD9gqPQiHEn8-B12ZEesXsqJ1aSULc\\$](https://urldefense.com/v3/__https://www.squirepattonboggs.com/en/professionals/g/gibbon-richard__;!!LBn7KyCY!VrITqeF46wdW5lQmjE2jt2_94LRpGhOehk_3NlF5GjnRsjtFPfvb2nIrWryPnloxKeD9gqPQiHEn8-B12ZEesXsqJ1aSULc$)

<sup>48</sup> UK Digital Dispute Resolution Rules (Digital DR Rules), 2021.

<sup>49</sup> 'Smart Contracts and Blockchain Arbitration: Smart Solutions Paving the Way for a Better Dispute Resolution Mechanism', Hiroo Advani, Asif Lampwala and Ria Garg, 25 April 2022, <https://www.sconline.com/blog/post/2022/04/25/smart-contracts-and-blockchain-arbitration-smart-solutions-paving-the-way-for-a-better-dispute-resolution-mechanism/>

<sup>50</sup> 'Digital Dispute Resolution Rules – a new way of resolving tech disputes?', 27 May 2021, <https://www.dacbeachcroft.com/es/mx/articles/2021/may/digital-dispute-resolution-rules-a-new-way-of-resolving-tech-disputes/#:~:text=Automatic%20decisions%3A%20The%20Rules%20allow,in%20accordance%20with%20the%20Rules.>

Alternatively, if a dispute isn't resolved automatically, parties can present it to an arbitrator, following a procedure similar to regular arbitration. The rules enable arbitrators to use a private key to directly implement their decisions on the blockchain.<sup>51</sup>

Recently in the fourth edition of the International Conference on Arbitration in the Era of Globalisation held in Dubai, Justice D.Y. Chandrachud, Judge of the Supreme Court of India made reference to smart contracts in his speech to demonstrate the technological advancements in the sphere of commercial transactions and identified arbitration as the means to resolve disputes relating to smart contracts.<sup>52</sup>

Andrea Utasy Clark, a Senior Associate at law firm Pinsent Masons, explained in an analysis published this September that cryptocurrency disputes “are well suited for, and are increasingly being referred to, arbitration”. This is because “the decentralized nature of crypto aligns with the neutrality of arbitration and both foster participation across multiple jurisdictions”.<sup>53</sup>

The idea that blockchain platforms and smart contracts will replace lawyers is a misconception. Instead, lawyers may suggest using smart contracts as an additional layer to reinforce the enforceability of the conventional legal agreements they are tasked with drafting.<sup>54</sup>

The lawyers who make such recommendations will find themselves having to work closely with computer scientists who will translate the operational clauses of the agreement into code, for example, on Ethereum’s platform.

In prominent blockchain arbitration systems like Kleros, adjudicators, often referred to as “jurors,” follow a specific selection process.<sup>55</sup> Jurors voluntarily categorize themselves into different courts, each dealing with specific types of disputes. However, the final appointment of

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<sup>51</sup> ‘Smart Contracts and Blockchain Arbitration: Smart Solutions Paving the Way for a Better Dispute Resolution Mechanism’, Hiroo Advani, Asif Lampwala and Ria Garg, 25 April 2022, <https://www.scconline.com/blog/post/2022/04/25/smart-contracts-and-blockchain-arbitration-smart-solutions-paving-the-way-for-a-better-dispute-resolution-mechanism/>

<sup>52</sup> *Id*; <https://www.barandbench.com/news/fourth-edition-international-conference-on-arbitration-era-globalization>

<sup>53</sup> Andrea Utasy Clark, ‘Cryptocurrency disputes increasingly referred to arbitration, with unique issues arising’, 27 September 2022, <https://www.pinsentmasons.com/out-law/analysis/cryptocurrency-disputes-increasingly-referred-to-arbitration-with-unique-issues-arising>

<sup>54</sup> ‘Whitepaper Smart Derivatives Contracts: From Concept to Construction’, ISDA, October 2018, <https://www.isda.org/a/cHvEE/Smart-Derivatives-Contracts-From-Concept-to-Construction-Oct-2018.pdf>

<sup>55</sup> ‘Kleros Whitepaper’, Clément Lesaege, Federico Ast, and William George, September 2019, <https://kleros.io/whitepaper.pdf>

adjudicators occurs randomly, preventing parties from directly nominating specific arbitrators for their disputes.<sup>56</sup>

In systems like Kleros, anyone can potentially become an adjudicator. The probability of being selected as an adjudicator for a dispute is directly proportional to the number of tokens a user stakes within the platform.<sup>57</sup> While other networks like Aragon<sup>58</sup> employ similar adjudicator selection systems, some, such as Jur<sup>59</sup>, Mattereum, and Sagewise, lean towards the international arbitration legal framework to enhance the enforceability of their awards worldwide.<sup>60</sup> Still, they may lack the flexibility of broader private autonomy and the role of conflicts of laws found in traditional international commercial arbitration processes.

These blockchain-based dispute resolution adjudicators, often called "jurors," are blockchain users elected to vote in favour of one party in a given dispute.<sup>61</sup> They utilize the Schelling Point method. Furthermore, jurors, like other blockchain users, have a direct financial interest in serving as adjudicators in the specific dispute.<sup>62</sup> Such mechanisms essentially constitute arbitration in the strict sense, as acknowledged by many authors and professional associations, including the Blockchain Arbitration Society.<sup>63</sup>

Blockchain arbitration offers the capability to securely store and verify rules and enables automatic execution when a specific event triggers a breach of the agreement, all by activating

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<sup>56</sup> Maxime Chevalier, 'From Smart Contract Litigation to Blockchain Arbitration, a New Decentralized Approach Leading Towards the Blockchain Arbitral Order' [Journal of International Dispute Settlement, vol. 12, issue 4, December 2021] 558 – 584 <https://academic.oup.com/jids/articleabstract/12/4/558/6414874?redirectedFrom=PDF>

<sup>57</sup> Ritika Bansal, 'Enforceability of Awards from Blockchain Arbitrations in India', Kluwer Arbitration Blog, August 21, 2019, <http://arbitrationblog.kluwerarbitration.com/2019/08/21/enforceability-of-awards-from-blockchain-arbitrations-in-india/>

<sup>58</sup> 'An opt-in digital jurisdiction for DAOs and sovereign individuals', 18 July 2018, <https://github.com/aragon/whitepaper>

<sup>59</sup> <https://jur.io/wp-content/uploads/2021/03/jur-white-paper-v.3.0.0.pdf>

<sup>60</sup> Darcy W.E. Allen, Aaron M. Lane & Marta Poblet, 'The Governance of Blockchain Dispute Resolution', *Harvard Negotiation Law Review*, vol. 25, issue 1, Fall 2019, 75-102

<sup>61</sup> Sharath Mulia and Romi Kumari, 'Blockchain Arbitration: The Future of Dispute Resolution', 23 November 2021, <https://www.foxmandal.in/blockchain-arbitration-the-future-of-dispute-resolution/>

<sup>62</sup> Maxime Chevalier, 'From Smart Contract Litigation to Blockchain Arbitration, a New Decentralized Approach Leading Towards the Blockchain Arbitral Order', *Journal of International Dispute Settlement*, Volume 12, Issue 4, December 2021, Pages 558–584, <https://academic.oup.com/jids/article-abstract/12/4/558/6414874?redirectedFrom=PDF>

<sup>63</sup> Ritika Bansal, 'Enforceability of Awards from Blockchain Arbitrations in India', Kluwer Arbitration Blog, August 21, 2019, <http://arbitrationblog.kluwerarbitration.com/2019/08/21/enforceability-of-awards-from-blockchain-arbitrations-in-india/>

the arbitration clause embedded in the smart contract.<sup>64</sup> Should a dispute arise, the smart contract will promptly notify the arbitrator through a blockchain-based dispute resolution interface. Parties can digitalize agreement terms, lock funds into a smart contract, and set conditions for the contract to fulfill its task, allowing the funds to be released accordingly. Once the process is complete, the self-executing nature of the smart contract automatically enforces the award and transfers the specified fee to the arbitrator.<sup>65</sup>

## **BLOCKCHAIN ARBITRATION PROCESS:**

1. **Appointment of an Arbitrator:** The process begins with the notice of arbitration, and the arbitrator is appointed via blockchain. All communication is automatically recorded and replicated across all stakeholders' computers, eliminating the need for third-party involvement. Case management conferences can be conducted online through blockchain-enabled video conferencing, ensuring a recorded and unaltered record.<sup>66</sup>
2. **Pleadings:** The submission of pleadings, including claims, defences, counterclaims, and responses, is done online and serves all parties and the Tribunal with automated acknowledgments. This process ensures timely submissions and maintains consistency in circulated pleadings. Delays may incur penalties as determined by the Tribunal or agreed upon by the parties. Procedural orders and communications from the Tribunal are auto-delivered to both parties to mitigate the risk of ex-parte communication.<sup>67</sup>
3. **Interim Measures:** Interim measures, if permitted by the judicial system, can be executed on the blockchain, provided the jurisdiction's administrative system is integrated with blockchain for immediate enforcement.
4. **Recording of Evidence & Award Preparation:** Blockchain proves its efficiency in evidence collection and award preparation. Witness conferences, cross-examinations,

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<sup>64</sup> 'A Look at the Use of Blockchain Technology in the Arbitration Process', 19 May 2023, <https://www.concordlawschool.edu/blog/news/blockchain-arbitration/>

<sup>65</sup> Joe Tirado, 'Lex Cryptographia: Guidelines for ensuring due process in transnational blockchain-based arbitration', 4 March 2022, <https://www.ibanet.org/lex-cryptographia-due-process-blockchain-based-arbitration>

<sup>66</sup> 'A Look at the Use of Blockchain Technology in the Arbitration Process', 19 May 2023, <https://www.concordlawschool.edu/blog/news/blockchain-arbitration/>

<sup>67</sup> 'Smart Contracts and Blockchain Arbitration: Smart Solutions Paving the Way for a Better Dispute Resolution Mechanism', Hiroo Advani, Asif Lampwala and Ria Garg, 25 April 2022, <https://www.scconline.com/blog/post/2022/04/25/smart-contracts-and-blockchain-arbitration-smart-solutions-paving-the-way-for-a-better-dispute-resolution-mechanism/>

and oral evidence can be conducted through blockchain-enabled video conferencing. Statements from expert witnesses, oral submissions, and expert communications are securely recorded on the blockchain.<sup>68</sup>

5. **Security of Data:** Blockchain provides a secure data storage method where every block is authenticated and replicated by all stakeholders. Data cannot be altered or deleted without unanimous authentication. With no third-party intervention, the risk of data breaches is minimal.<sup>69</sup>

Globally, blockchain technology is increasingly utilized for effective data storage, management, distribution, and transfer. Its encryption mechanisms make it a powerful tool to enhance the efficiency of arbitral proceedings, particularly in securing data.<sup>70</sup>

## **HOW IS BLOCKCHAIN ARBITRATION DIFFERENT FROM TRADITIONAL ARBITRATION?**

Blockchain arbitration models lack some essential features of traditional arbitration. Firstly, arbitral awards typically need to be in written form and signed by the arbitrators. However, in blockchain arbitration, the awards are entirely digital, and the jurors' identities are anonymous, making it impossible for the awards to be signed by them.<sup>71</sup>

The parties have limited freedom in selecting the arbitrator, such as choosing the language, nationality, qualifications, or applicable law. These choices can impact the availability of blockchain arbitrators. Additionally, there is no physical "seat" of arbitration in decentralized online blockchain arbitration platforms.<sup>72</sup>

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<sup>68</sup> Sharath Mulia and Romi Kumari, 'Blockchain Arbitration: The Future of Dispute Resolution', 23 November 2021, <https://www.foxmandal.in/blockchain-arbitration-the-future-of-dispute-resolution/>

<sup>69</sup> A Look at the Use of Blockchain Technology in the Arbitration Process', 19 May 2023, <https://www.concordlawschool.edu/blog/news/blockchain-arbitration/>

<sup>70</sup> Sharath Mulia, 'Blockchain Arbitration: The Future of Dispute Resolution', <https://www.lexology.com/library/detail.aspx?g=2a2f2cef-39a5-4551-a7df4c9e408a5ccc#:~:text=Once%20the%20notice%20of%20arbitration.involvement%20of%20any%20third%20party>

<sup>71</sup> A Look at the Use of Blockchain Technology in the Arbitration Process', 19 May 2023, <https://www.concordlawschool.edu/blog/news/blockchain-arbitration/>

<sup>72</sup> Thalia Kruger, 'Can Blockchain Arbitration become a proper 'International Arbitration'? Jurors vs. arbitrators', 22 May 2022, <https://conflictoflaws.net/2022/can-blockchain-arbitration-become-a-proper-international-arbitration-jurors-vs-arbitrators/>

Lastly, parties should receive signed copies of the awards in traditional arbitration. But in blockchain arbitration, due to the anonymity of jurors, signed copies of the awards cannot be provided.<sup>73</sup>

## **BLOCKCHAIN ARBITRATION > TRADITIONAL ARBITRATION**

Arbitration aims to provide a timely and specialized decision-making process. Blockchain Arbitration holds promise as an ideal framework for the trial process in several ways:<sup>74</sup>

- i. **Eliminating Intermediaries and Cost Savings:** Blockchain Arbitration removes the need for intermediary approval and control at each stage, reducing costs and time-intensive processes, particularly when dealing with institutions like banks involved in legal and financial transactions.<sup>75</sup>
- ii. **Automation:** A blockchain-based dispute resolution platform streamlines various procedures. It reduces the need for oral hearings and automates tasks such as filing pleadings, submitting evidence, and correspondence with the Arbitral Tribunal. Smart contracts and blockchains have the potential to alter the way documentation and dispute resolution are approached. Hence the concepts need integration, implementation and recognition with arbitration for a more efficient, cost-effective and automated.
- iii. **Facilitating Arbitral Awards:** Blockchain tools can aid Tribunals in preparing awards, ensuring they meet the necessary criteria for reason and enforceability. The blockchain continually updates the award as arbitration progresses.
- iv. **Data Confidentiality and Security:** Blockchain is a secure way to store information. Each block is authenticated by the Arbitral Tribunal and the involved parties, and data cannot be unilaterally changed, altered, or deleted. Third-party involvement is minimal, reducing the risk of data breaches. Smart contract disputes can be kept confidential,

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<sup>73</sup> Rana Sajjad Ahmad, 'Blockchain Arbitration: Promises and Perils', *The American Review of International Arbitration*, March 23, 2023, <https://aria.law.columbia.edu/blockchain-arbitration-promises-and-perils/>

<sup>74</sup> Cemre Kadioglu Kumtepe, 'A Brief Introduction to Blockchain Dispute Resolution', *John Marshall Law Journal*, Vol. 14, No. 2, 2021, [https://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=4083107](https://papers.ssrn.com/sol3/papers.cfm?abstract_id=4083107)

<sup>75</sup> World Economic Forum, *Bridging the Governance Gap: Dispute resolution for blockchain-based transactions*, Whitepaper December 2020, [https://www3.weforum.org/docs/WEF\\_WP\\_Dispute\\_Resolution\\_for\\_Blockchain\\_2020.pdf](https://www3.weforum.org/docs/WEF_WP_Dispute_Resolution_for_Blockchain_2020.pdf)

limiting the exposure of the dispute's nature. The decentralized structure of blockchain, protected by cryptography, enhances system security.<sup>76</sup>

- v. **Eliminating Human Error:** Transaction reliability and validity are based on the accuracy of underlying algorithms. Since transactions rely on mathematical models, they are free from human influence and intervention, reducing the potential for human error.<sup>77</sup>

Blockchain arbitration has distinct advantages, particularly in situations where parties using blockchain for communication are from different legal jurisdictions. It also offers value in the evolving landscape of smart contracts, where the freedom to select arbitrators familiar with the intricacies of coding language becomes essential.<sup>78</sup> Furthermore, arbitration provides a degree of flexibility by allowing parties to move away from the traditional framework of contract law, which may not easily apply to contracts using smart contracts on blockchain platforms, particularly in issues of validity, formation, and interpretation.<sup>79</sup>

Smart contracts on blockchain platforms can also aid arbitrators in forming legal agreements incidental to arbitration. For example, multi-signature smart contracts, when combined with an arbitral institution, can condition the release of funds on electronic signatures from either both parties or one party and the arbitrator/arbitral institution in pre-hearing proceedings. This ensures that earmarked funds cannot be unilaterally accessed.<sup>80</sup> If a dispute arises over meeting the agreement's obligations, both parties must follow the process before gaining access to the funds. In a multi-signature smart contract requiring two electronic signatures to transfer funds, the party would need the arbitrator/arbitral institution's electronic signature in addition to its own, should the other party not provide theirs.<sup>81</sup>

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<sup>76</sup> Sharath Mulia and Romi Kumari, 'Blockchain Arbitration: The Future of Dispute Resolution', 23 November 2021, <https://www.foxmandal.in/blockchain-arbitration-the-future-of-dispute-resolution/>

<sup>77</sup> Cemre Kadioglu Kumtepe, 'A Brief Introduction to Blockchain Dispute Resolution', John Marshall Law Journal, Vol. 14, No. 2, 2021, [https://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=4083107](https://papers.ssrn.com/sol3/papers.cfm?abstract_id=4083107)

<sup>78</sup> Alan Ma, 'Blockchain-Enabled Smart Legal Contracts', 26 July 2022, <https://www.intechopen.com/chapters/86570>

<sup>79</sup> Rabindra Kumar Mitra, 'Blockchain Technology: Importance of Transnational Laws and Jurisdictional Issues in Blockchain Dispute Resolution', <https://rmlnlulawreview.com/2019/02/26/blockchain-technology-importance-of-transnational-laws-and-jurisdictional-issues-in-blockchain-dispute-resolution/>

<sup>80</sup> Jelena Madir, 'Smart Contracts: (How) Do They Fit Under Existing Legal Frameworks?', 17 December 2018, [https://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=3301463](https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3301463)

<sup>81</sup> Stuart D. Levi and Alex B. Lipton, Skadden, Arps, Slate, Meagher & Flom LLP, 'An Introduction to Smart Contracts and Their Potential and Inherent Limitations', *Harvard Law School Forum on Corporate Governance*, 26 May 2018, <https://corpgov.law.harvard.edu/2018/05/26/an-introduction-to-smart-contracts-and-their-potential-and-inherent-limitations/>

The Permanent Court of Arbitration experienced a cyberattack<sup>82</sup> during a crucial hearing on maritime border arbitration between China and the Philippines, part of the "*Republic of Philippines v. People's Republic of China*" international arbitration case.<sup>83</sup>

Regarding the trustworthiness of blockchain technology in addressing such challenges, the World Economic Forum's 2015 survey predicted that by 2025-27, approximately 10% of the global GDP would be managed using blockchains due to their efficient data security features.<sup>84</sup> It's highly likely that blockchain technology will be employed for tax collection by 2025.<sup>85</sup> Additionally, the World Trade Organization's 2018 research extensively explored the future opportunities stemming from the effectiveness of blockchain safeguard mechanisms.<sup>86</sup>

In terms of the legal recognition of blockchain arbitration and the process to be followed, the UNCITRAL Electronic Model Law on Electronic Commerce (1996 Convention)<sup>87</sup> and the 'UNCITRAL Convention on Electronic Communications in International Contracts (2007 Convention)' serve as the primary legal frameworks supporting blockchain contracts.<sup>88</sup>

## **CHALLENGES DUE TO BLOCKCHAIN ARBITRATION**

1. Oral Hearings: Traditional justice systems rely on oral hearings, which are notably absent in on-chain arbitration. This departure from the established legal process raises questions about adherence to the principles of natural justice.<sup>89</sup>

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<sup>82</sup> Jason Healey and Anni Piiparinen, 'Did China Just Hack the International Court Adjudicating Its South China Sea Territorial Claims?', *The Diplomat*, October 27, 2015, <https://thediplomat.com/2015/10/did-china-just-hack-the-international-court-adjudicating-its-south-china-sea-territorial-claims/>

<sup>83</sup> THE REPUBLIC OF THE PHILIPPINES And THE PEOPLE'S REPUBLIC OF CHINA, *The South China Sea Arbitration*

Award of 12 July 2016, <https://docs.pca-cpa.org/2016/07/PH-CN-20160712-Award.pdf>

<sup>84</sup> World Economic Forum Survey Report, 'Deep Shift Technology Tipping Points and Societal Impact', September 2015, [http://www3.weforum.org/docs/WEF\\_GAC15\\_Technological\\_Tipping\\_Points\\_report\\_2015.pdf](http://www3.weforum.org/docs/WEF_GAC15_Technological_Tipping_Points_report_2015.pdf)

<sup>85</sup> <https://www.foxmandal.in/expertise/technology-law/>

<sup>86</sup> Emmanuelle Ganne, 'Can Blockchain Revolutionize international trade?', WTO, [https://www.wto.org/english/res\\_e/booksp\\_e/blockchainrev18\\_e.pdf](https://www.wto.org/english/res_e/booksp_e/blockchainrev18_e.pdf)

<sup>87</sup> UNCITRAL Model Law on Electronic Commerce with Guide to Enactment 1996 with additional article 5 bis as adopted in 1998, [https://uncitral.un.org/sites/uncitral.un.org/files/media-documents/uncitral/en/19-04970\\_ebook.pdf](https://uncitral.un.org/sites/uncitral.un.org/files/media-documents/uncitral/en/19-04970_ebook.pdf)

<sup>88</sup> United Nations Convention on the Use of Electronic Communications in International Contracts, [https://uncitral.un.org/sites/uncitral.un.org/files/media-documents/uncitral/en/06-57452\\_ebook.pdf](https://uncitral.un.org/sites/uncitral.un.org/files/media-documents/uncitral/en/06-57452_ebook.pdf)

<sup>89</sup> Nevena Jevremović, '2018 In Review: Blockchain Technology and Arbitration', January 27, 2019, *Kluwer Arbitration Blog*, <http://arbitrationblog.kluwerarbitration.com/2019/01/27/2018-in-review-blockchain-technology-and-arbitration/>

2. Data Privacy: While blockchain provides robust data security, the involvement of independent third parties, known as oracles, in dispute resolution can raise data privacy issues. Existing regulations like the General Data Protection Regulation (GDPR)<sup>90</sup> struggle to address decentralized blockchain operations, making it challenging to impose liability<sup>91</sup> on data controllers. Additionally, blockchain's inherent traceability contradicts the GDPR's "right to be forgotten" requirement.<sup>92</sup>
3. Enforceability: The New York Convention on the Enforcement of Foreign Arbitral Awards of 1958 is a key framework for enforcing international arbitral awards, requiring a written agreement with signatures (Article II).<sup>93</sup> However, virtual blockchain arbitration lacks the scope for traditional written agreements or signatures, posing a challenge to the convention's requirements.
4. smart contracts in blockchain transactions, being self-automated and coded, do not fulfil the requirement of digital signatures in terms of contractual enforcement.<sup>94</sup>
5. within both contract law and the Arbitration Act, identifying parties is a crucial aspect for enforcing contracts and arbitration agreements, especially in accordance with the Evidence Act, alongside section 7(4)(a) and 8 of the Arbitration Act.<sup>95</sup> In a system built on coded party anonymity, determining the parties involved in a smart contract breach or termination becomes challenging, particularly concerning sections of the Arbitration Act.
6. the necessity of stamping a domestic arbitral award in a "written" format presents an additional challenge to the blockchain arbitral order. However, unlike Article II of the New York Convention, Section 7 of the Arbitration and Conciliation further clarifies that an agreement would be considered as having been in writing if it has been communicated through "electronic means".<sup>96</sup> The allowance for "electronic means" was introduced

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<sup>90</sup> General Data Protection Regulation, Regulation (EU) 2016/679, <https://gdpr-info.eu/>

<sup>91</sup> Claudio Lima, Blockchain-GDPR Privacy by Design, *How Decentralized Blockchain Internet will Comply with GDPR Data Privacy*, <https://blockchain.ieee.org/images/files/pdf/blockchain-gdpr-privacy-by-design.pdf>

<sup>92</sup> LEGAL AND REGULATORY FRAMEWORK OF BLOCKCHAINS AND SMART CONTRACTS, report prepared by THE EUROPEAN UNION BLOCKCHAIN OBSERVATORY AND FORUM, [https://www.eublockchainforum.eu/sites/default/files/reports/report\\_legal\\_v1.0.pdf](https://www.eublockchainforum.eu/sites/default/files/reports/report_legal_v1.0.pdf)

<sup>93</sup> United Nations, Convention on the Recognition and Enforcement of Foreign Arbitral Awards (New York, 1958), <https://uncitral.un.org/sites/uncitral.un.org/files/media-documents/uncitral/en/new-york-convention-e.pdf>

<sup>94</sup> Information Technology Act, 2000, § 5 and 10

<sup>95</sup> The Indian Evidence Act, 1872; The Arbitration and Conciliation Act, 1996, § 7(4)(a) and 8

<sup>96</sup> The Arbitration and Conciliation Act, 1996, § 7

through Section 3 of the Arbitration and Conciliation (Amendment) Act, 2015.<sup>97</sup>

Electronic means has not been defined under the Act or the Amendment Act despite the recommendation of the 246 Law Commission Report.<sup>98</sup>

7. it's essential to note that under the New York Convention (Article IV), to which India is a signatory, the presence of signatures or party identification is not a fundamental requirement for the form and content of arbitral awards.<sup>99</sup>

## CASE STUDIES

Kleros is an ethereum based, decentralized, online dispute resolution platform founded by in 2018.<sup>100</sup> It has been a pathbreaker from the traditional arbitration methods which have been criticized as slow and inefficient. It has the potential of relaxing the workload on already overburdened arbitration tribunals in various countries, moreover since the mechanism functions on an online level the location of the parties is immaterial and it can resolve the disputes of parties located in any part of the world that too in a timely manner.

Ethereum, a popular cryptocurrency plays a key role in Kleros as, if one desires to be a party or a juror to a dispute on the system one has to purchase ethereum (ETH) and exchange it for the Kleros cryptocurrency pinkanion (PNK).<sup>101</sup> Another distinctive feature of Kleros is it's selection process when it comes to the jury, instead of giving primacy to their qualifications and knowledge of the jurors or even giving an option to the parties to choose their arbitrators, the jurors are decided on the basis of the highest PNK bid.<sup>102</sup> Three jurors are selected for the same and for participating, each juror and participant is required to pay a PNK fee which when the jury comes to a majority opinion is reimbursed to them and the PNK fee of the juror with the minority opinion is distributed. Similarly, in case of parties while the winning party gets the PNK reimbursed, whatever costs incurred with regards to the jury and court are to be borne by

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<sup>97</sup> The Arbitration and Conciliation Act, 1996, § 3; United Nations, Convention on the Recognition and Enforcement of Foreign Arbitral Awards (New York, 1958), <https://uncitral.un.org/sites/uncitral.un.org/files/media-documents/uncitral/en/new-york-convention-e.pdf>

<sup>98</sup> Aseem Chaturvedi and Trishala Trivedi, 'India: The Blockchain Arbitral Order: An Indian Perspective', 16 June 2023, <https://www.mondaq.com/india/arbitration--dispute-resolution/1330488/the-blockchain-arbitral-order-an-indian-perspective>

<sup>99</sup> United Nations, Convention on the Recognition and Enforcement of Foreign Arbitral Awards (New York, 1958), <https://uncitral.un.org/sites/uncitral.un.org/files/media-documents/uncitral/en/new-york-convention-e.pdf>

<sup>100</sup> Kleros official website, <https://kleros.io/>

<sup>101</sup> Nathaniel Popper, New York Times, *Ethereum, a Virtual Currency, Enables Transactions That Rival Bitcoin's*, March 27, 2016

<sup>102</sup> Yannick Gabuthy, *Blockchain-Based Dispute Resolution: Insights and Challenges*, <https://doi.org/10.3390/g14030034>

the losing party. Basically, the entire process is based on economic incentives for both, the parties and the jurors as opposed to traditional forms of arbitration. Ethereum, a popular cryptocurrency plays a key role in Kleros as, if one desires to be a party or a juror to a dispute on the system one has to purchase ethereum (ETH) and exchange it for the Kleros cryptocurrency pinkanion (PNK).<sup>103</sup>

Another distinctive feature of Kleros is its selection process, when it comes to the jury, instead of giving primacy to their qualifications and knowledge of the jurors or even giving an option to the parties to choose their arbitrators, the jurors are decided on the basis of the highest PNK bid.<sup>104</sup> The jurors are selected randomly and no information about them is known to the parties except the address from which the tokens were deposited. Three jurors are selected for the same and for participating, each juror and participant is required to pay a PNK fee which when the jury comes to a majority opinion is reimbursed to them and the PNK fee of the juror with the minority opinion is distributed. Similarly, in case of parties while the winning party gets the PNK reimbursed, whatever costs incurred with regards to the jury and court are to be borne by the losing party. Basically, the entire process is based on economic incentives for both, the parties and the jurors as opposed to traditional forms.<sup>105</sup>

The voting procedure for the jurors is such that each juror has to vote independently i.e., without consultation with each other on a binary (yes or no) basis, although decision can be taken on a non-binary basis too but in this context it becomes too complicated especially because the juror giving a dissenting opinion stands to lose his PNK fee.

Even the Appeal procedure in this mechanism is distinct from the one in traditional arbitral tribunals where the number of times an appeal can be made depends on the number of tribunals. As Kleros dispute resolution is based on economic incentives, the jury's verdict can be appealed a limitless number of times, depending on the parties' financial capabilities, and each process must be paid for by the parties concerned.<sup>106</sup>

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<sup>103</sup> Pranay Modi, *Kleros: is crypto-based dispute resolution the future?*, <https://vidhilegalpolicy.in/blog/kleros-is-crypto-based-dispute-resolution-the-future/>

<sup>104</sup> Larry A. DiMatteo, André Janssen, Pietro Ortolani, Francisco de Elizalde, Michel Cannarsa, Mateja Durovic, Cambridge University Press, *Lawyering in the Digital Age*, 18 November 2021

<sup>105</sup> Mauricio Virues, *How to Enforce Blockchain Dispute Resolution in Court? The Kleros Case in Mexico*, 10 January, 2022, <https://blog.kleros.io/how-to-enforce-blockchain-dispute-resolution-in-court-the-kleros-case-in-mexico/>

<sup>106</sup> Zhuk, A 'Applying blockchain to the modern legal system: Kleros as a decentralised dispute resolution system', *International Cybersecurity Law Rev.* 4, 351–364 (2023)

Despite having multiple advantages, the mechanism is not without defects. Its biggest drawback being its relaxed approach towards individuals who want to participate as jurors which throws light on its yet another drawback i.e. the mechanism is based on monetary contributions by the parties and jurors. Since, there is no requirement for individuals to have any specific qualifications or pre-requisite knowledge of applicable laws in order to resolve a dispute the parties cannot be assured that the jurors handling their dispute are competent to do so as the only requirement for jurors is the payment of a PNK fee. Moreover, unlike offline arbitration proceedings, the parties are not allowed to choose the jurors as they are selected at random by the mechanism itself moreover the even decide the number of jurors which would be required to resolve a dispute which takes away the freedom of parties which would otherwise be offered to them had they opted for a traditional method rather than Kleros.<sup>107</sup>

The economic incentives and risk of incurring losses discourages jurors from delivering a dissenting decision and hence, also confines their mind to play safe and vote on the basis of the probability of how other jurors would vote. Ideally jurors must not be penalized for taking minority decisions since there is no reasonable basis to do so. In fact, in case of traditional tribunals, dissenting opinions provide reference for the future and oftentimes help in reversal of a judgment if it is considered unfair or unjust in future. The lack of justice motive in Kleros, the requirement of payment of PNK fee, the juror with a minority opinion losing his fee and the fact that the number of times a decision can be appealed depends on how strong the financial position of a party is throws light on the elitist nature of Kleros and proves beyond a doubt that as of now it is not suitable for lower- and middle-income individuals.<sup>108</sup>

In addition to the drawbacks in its dispute resolution procedure, even the process of participating in Kleros is complicated.<sup>109</sup> Firstly, a special browser has to be installed that works with a web3-enabled plug-in order to enable the cryptocurrency exchange as commercial browsers such as google do not support this feature. After this is done, whoever wishes to purchase a cryptocurrency must create a wallet for ETH and a wallet for tokens to which ETH will be transferred to purchase PNK. This is a major impediment for the litigants as well as the jurors

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<sup>107</sup> Clément Lesaege, Federico Ast, and William George, Kleros Whitepaper, September 2019, <https://kleros.io/whitepaper.pdf>

<sup>108</sup> Kleros FAQ, <https://docs.kleros.io/kleros-faq>

<sup>109</sup> Alesia Zhuk, *Applying blockchain to the modern legal system: Kleros as a decentralised dispute resolution system*, International Cybersecurity Law Review, 12 April 2023

since they need to have special knowledge with regards to cryptocurrency to even participate in the process as a result of which they might need the help of a lawyer who has such knowledge in order to put forth the case of the litigants in front of a jury. Since, one of the main objectives of Kleros was to dilute the monopoly of lawyers and jurists, this drawback is highly likely to defeat its purpose.<sup>110</sup>

Kleros has the potential of revolutionizing the field of dispute resolution and introducing blockchain in the judicial system which would be beneficial for efficiency and speedy resolution of disputes and for providing a much-needed breakaway from traditional methods where disputes drag on for decades and still remain inconclusive.<sup>111</sup> In order to achieve its desired impact it needs to work on its shortcomings. This can be done by reducing the emphasis on financial incentives, making it mandatory to have knowledge of applicable laws and pre-requisite training for individuals to participate as jurors and, allowing parties to select the number of jurors required and providing tutorial videos regarding the process to submit a dispute in front of jury.<sup>112</sup>

The Kleros 'arbitration' system is one which can be activated once a dispute arises in the execution of a smart contract deployed in Ethereum, freezing fund transfers under the smart contract until the conflict is resolved.<sup>113</sup> It is a decentralised system adopting blockchain arbitration for the settlement of disputes under smart contracts through the appointment of jurors, costs, etc. as preconditions to admitting such matters under the dispute resolution clause of a smart contract.<sup>114</sup> Effectively, such a system would qualify to be a form of Online Dispute Resolution ("ODR"), which have been recognised as tenable under the United Nations Commission on International Trade Law ("UNCITRAL") by the Working Group III of UNCITRAL. India has been a member UNCITRAL and has legislated the Arbitration Act on

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<sup>110</sup> William George, *Kleros and the Advantages and Limitations of Crypto economics*, Nov 2, 2021, <https://blog.kleros.io/kleros-and-the-advantages-and-limitations-of-cryptoeconomics/>

<sup>111</sup> Luis Bergolla, Karen Seif, Can Eken, *Kleros: A Socio-Legal Case Study Of Decentralized Justice & Blockchain Arbitration*, <https://moritzlaw.osu.edu/sites/default/files/2022-08/10-%20BERGOLLA%2055-98.pdf>, 2022

<sup>112</sup> William George, *Kleros and the Advantages and Limitations of Crypto economics*, Nov 2, 2021, <https://blog.kleros.io/kleros-and-the-advantages-and-limitations-of-cryptoeconomics/>

<sup>113</sup> Clément Lesaege, Federico Ast, and William George, *Kleros Whitepaper*, September 2019, <https://kleros.io/whitepaper.pdf>

<sup>114</sup> Yannick Gabuthy, *Blockchain-Based Dispute Resolution: Insights and Challenges*, MDPI, 28 April 2023, <https://www.mdpi.com/2073-4336/14/3/34>

the basis of the UNCITRAL model.<sup>115</sup>

The platform uses the wisdom of the crowds (known as crowdsourcing), game theory and jury voting for resolution of disputes through appointed jurors incentivised through payment as arbitrators and appointed through the submission of PNK tokens (a form of cryptocurrency).<sup>116</sup> While this platform created a space for ODR under the aforementioned mechanism, the decision of a Mexican Court changed the complexion of arbitral awards adjudicated by the Kleros mechanism as laid down above. Therein, an arbitrator under traditional arbitration incorporated the arbitral award of Kleros under his arbitral award – the specific portion of the traditional arbitrators' award which was explicitly recognised by the Court. Kleros case proves to be a remarkable precedent for the same.<sup>117</sup> Drawing parallels, the pre-existing principles of party autonomy and Ex Aequo et Bono can be used to incorporate this model into the legal framework of India.<sup>118</sup>

The paradigm adopted in Mexico showcases an instance of convergence of a national legal order with blockchain arbitration, wherein it was ensured that the prevailing *lex arbitri* was not contravened.<sup>119</sup>

Additionally, the Carrera Report also made a case on admitting small-scale claims, insurance matters and other such disputes referred Kleros to be worthy recognition within civil justice systems – particularly from the standpoint of enforceability. This Report also suggested that the parties' choice to resort to blockchain arbitration could be recognised both as a transactional agreement, or as a tool for Ex Aequo et Bono ("Rule") decision making. Fortunately, this Rule has been read into Section 28(2) of the Arbitration Act and would help adopt the Kleros model,

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<sup>115</sup> Aseem Chaturvedi and Trishala Trivedi, 'India: The Blockchain Arbitral Order: An Indian Perspective', 16 June 2023, <https://www.mondaq.com/india/arbitration--dispute-resolution/1330488/the-blockchain-arbitral-order-an-indian-perspective>

<sup>116</sup> Luis Bergolla, Karen Seif, Can Eken, Kleros: A Socio-Legal Case Study Of Decentralized Justice & Blockchain Arbitration, <https://moritzlaw.osu.edu/sites/default/files/2022-08/10-%20BERGOLLA%2055-98.pdf>, 2022

<sup>117</sup> *Blockchain Arbitration in India: Adopting the Hybrid Model Envisaged by Mexican 'Kleros' Case*, Raghav Saha, Harshit Upadhyay, June 14, 2022

<sup>118</sup> Ritika Bansal, 'Enforceability of Awards from Blockchain Arbitrations in India', Kluwer Arbitration Blog, August 21, 2019, <http://arbitrationblog.kluwerarbitration.com/2019/08/21/enforceability-of-awards-from-blockchain-arbitrations-in-india/>

<sup>119</sup> Aseem Chaturvedi and Trishala Trivedi, 'India: The Blockchain Arbitral Order: An Indian Perspective', 16 June 2023, <https://www.mondaq.com/india/arbitration--dispute-resolution/1330488/the-blockchain-arbitral-order-an-indian-perspective>

in addition to global jurisprudence on the same now.<sup>120</sup> More importantly, this could lead to the creation of a hybrid model wherein the arbitrators could be required to create a Procedural Order that includes a brief summary of the dispute and evidence to support it. This Order would be addressed to Kleros, which makes its decision based solely on legal facts. The Arbitrator then must incorporate Kleros' decision into their Arbitral Award to govern the substance of the ruling and issue it in writing.<sup>121</sup>

## **REGULATORY AND PRACTICAL CONSIDERATIONS**

In the case of *Transocean Shipping Agency v. Black Sea Shipping*, an award of Ukraine was enforced in India despite the fact that Ukraine had not been gazetted formally by the Central Government.<sup>122</sup> However, the reason for this was that India gazetted the USSR of which Ukraine used to be a part before disintegration.

Arbitrators in blockchain arbitration are chosen by the dispute resolution service provider once a smart contract requests arbitration.<sup>123</sup> These arbitrators are usually people who have offered their services to service providers. The arbitral award is subsequently recorded on the blockchain ledger, and copies are made available to the parties on their respective computers in different countries.<sup>124</sup> However, the arbitral award cannot be claimed to have been made in any single country. As a result of the reciprocity clause, the question of whether such an award can be implemented in India arises. This question is better answered when the service provider seeks an award from an established arbitral institution. In such a circumstance, the country in which the arbitral institution is created can be reviewed to determine if it meets the reciprocity and enforceability requirement in India.

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<sup>120</sup> Teramura, Nobumichi, *Ex Aequo et Bono as a Response to the 'Over-Judicialisation' of International Commercial Arbitration*, 2018, <https://doi.org/10.26190/unsworks/20865>

<sup>121</sup> Maxime Chevalier, *Arbitration Tech Toolbox: Is a Mexican Court Decision the First Stone to Bridging the Blockchain Arbitral Order with National Legal Orders*, Kluwer Arbitration Blog, March 4, 2022, <https://arbitrationblog.kluwerarbitration.com/2022/03/04/arbitration-tech-toolbox-is-a-mexican-court-decision-the-first-stone-to-bridging-the-blockchain-arbitral-order-with-national-legal-orders/>

<sup>122</sup> *Transocean Shipping Agency (P) Ltd. v. Black Sea Shipping*, (1998) 2 SCC 281

<sup>123</sup> Ritika Bansal, *Enforceability of Awards from Blockchain Arbitrations in India*, August 21, 2019, <https://arbitrationblog.kluwerarbitration.com/2019/08/21/enforceability-of-awards-from-blockchain-arbitrations-in-india/#:~:text=In%20blockchain%20arbitration%2C%20arbitrators%20are,service%20providers%20with%20their%20expertise.>

<sup>124</sup> Despoina Kottaridou, *The use of arbitration for the resolution of disputes arising from the use of blockchain technology*, February, 2023, <https://repository.ihu.edu.gr/xmlui/bitstream/handle/11544/30149/THE%20USE%20OF%20ARBITRATION%20FOR%20THE%20RESOLUTION%20OF%20DISPUTES%20ARISING%20FROM%20THE%20USE%20OF%20BLOCKCHAIN%20TECHNOLOGY.pdf?sequence=1>

Sections 36 and 48 of the Arbitration and Conciliation Act specify the provisions for the enforceability of a local and international arbitral award, respectively.<sup>125</sup> An original copy of the award should be included in any application for the enforceability of either of these awards.<sup>126</sup> This becomes challenging in blockchain arbitration because there is no single original copy of the ruling in these arbitrations, and the award is made available to everyone on the network.<sup>127</sup> It can be claimed, however, that the Act also permits duly certified copies of the original award to be given to the Court. The blockchain method purportedly makes it impossible for anyone to simply change their copy of the arbitration award, implying that a copy of the award obtained from the blockchain would be officially certified in and of itself. To increase security, courts can be granted access to the blockchain in order to obtain a direct copy of the award.<sup>128</sup>

In contrast to a foreign award, a domestic award must be marked in order to be enforced under Section 36 of the Arbitration Act.<sup>129</sup> Section 3 of the Stamp Act, when read in conjunction with Schedule I of the Act, recommends that an arbitral award made in writing be stamped.<sup>130</sup> The issue of a "written" arbitral award is analogous to the issue of a written arbitration agreement, which was explored previously.<sup>131</sup> Currently, the Stamp Act excludes electronic means from the definition of a written arbitral award.<sup>132</sup> In the absence of a legislative amendment to that effect, the Stamp Act could be read to allow for electronic arbitral awards, following the trend demonstrated by the Arbitration and Conciliation Act and the Information Technology Act in facilitating technological advancements in commercial transactions.<sup>133</sup>

Furthermore, Section 17 of the Registration Act requires domestic awards to be registered when

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<sup>125</sup> The Arbitration and Conciliation Act, 1996, § 36 & § 48

<sup>126</sup> The Arbitration and Conciliation Act, 1996, § 47

<sup>127</sup> Cemre Kadioglu Kumtepe, A Brief Introduction to Blockchain Dispute Resolution, John Marshall Law Journal, Vol. 14, No. 2, 2021, [https://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=4083107](https://papers.ssrn.com/sol3/papers.cfm?abstract_id=4083107)

<sup>128</sup> Ritika Bansal, 'Enforceability of Awards from Blockchain Arbitrations in India', Kluwer Arbitration Blog, August 21, 2019, <http://arbitrationblog.kluwerarbitration.com/2019/08/21/enforceability-of-awards-from-blockchain-arbitrations-in-india/>

<sup>129</sup> The Arbitration and Conciliation Act, 1996, § 36

<sup>130</sup> The Indian Stamp Act, 1899 § 3

<sup>131</sup> Sanjeev K Kapoor and Saman Ahsan, Challenging and Enforcing Arbitration Awards: India, Global Arbitration Review, 24th July 2023, <https://globalarbitrationreview.com/insight/know-how/challenging-and-enforcing-arbitration-awards/report/india>

<sup>132</sup> Partharthi Srivastava, Siddharth Jain, Riya Singh, Blockchain Arbitration: Identifying the Odds, ADR Newsletter, Sept 22 Vol. 7, <https://www.nluo.ac.in/wp-content/uploads/2023/02/ADR-NEWSLETTER-VOL-VII.pdf>

<sup>133</sup> Justice Manju Goel, Arbitration Award and Stamp Duty Paid On It, 24 Sept 2023, <https://www.livelaw.in/articles/arbitration-award-stamp-duty-indian-stamp-act-238558>

they affect immovable property rights.<sup>134</sup> Only such an award, appropriately stamped and/or registered, may be presented to the Court for enforcement. This means that giving the Enforcement Court direct access to the blockchain would be insufficient because such an award would also need to be duly stamped and/or registered beforehand.<sup>135</sup> Direct access might be granted in domestic awards for the purpose of proving the original award when stamping and registering the document.<sup>136</sup> A copy of the award that has been officially stamped and/or registered might be regarded "original" for the purposes of filing an application under Section 36 of the Arbitration and Conciliation Act.<sup>137</sup> For foreign awards, direct access can simply be given to the Court in which an application for enforcement of the foreign award is made.<sup>138</sup>

When blockchain arbitration platforms serve as alternatives to traditional arbitration, the judgements they render must be treated as arbitral awards. In the instance of international arbitration, the New York Convention only recognises the enforceability of foreign arbitral awards made in a country other than the jurisdiction where the awards are sought to be recognised and enforced.<sup>139</sup> Because blockchain arbitration systems are fully digital and decentralized, they cannot be considered part of any State territory. As a result, their judgements extend outside the scope of the New York Convention and, as a result, the Arbitration and Conciliation Act, 1996 ("the Act").

All arbitral awards must meet the form and content requirements contained in the domestic statutes of the countries seeking enforcement. Section 31 of the Act, based on the UNCITRAL Model Law on International Commercial Arbitration, specifies the form and content of arbitral awards that must be followed in order for them to be implemented in India.<sup>140</sup> These prerequisites are not met by direct blockchain arbitral judgements.

First and foremost, the arbitral awards must be written and signed by the arbitrators. However,

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<sup>134</sup> The Registration Act, 1908, § 17

<sup>135</sup> Blockchain technologies and IP ecosystems: A WIPO white paper, <https://www.wipo.int/export/sites/www/cws/en/pdf/blockchain-for-ip-ecosystem-whitepaper.pdf>

<sup>136</sup> Sanjeev K Kapoor and Saman Ahsan, Challenging and Enforcing Arbitration Awards: India, Global Arbitration Review, 24th July 2023, <https://globalarbitrationreview.com/insight/know-how/challenging-and-enforcing-arbitration-awards/report/india>

<sup>137</sup> The Arbitration and Conciliation Act, 1996, § 36

<sup>138</sup> The Arbitration and Conciliation Act, 1996, § 36

<sup>139</sup> UNCITRAL, 1958 New York Convention Guide, [https://newyorkconvention1958.org/index.php?lvl=cmspage&pageid=10&menu=617&opac\\_view=-1#:~:text=Article%20I%20\(1\)%20provides%20that,%2C%20whether%20physical%20or%20legal%E2%80%9D.](https://newyorkconvention1958.org/index.php?lvl=cmspage&pageid=10&menu=617&opac_view=-1#:~:text=Article%20I%20(1)%20provides%20that,%2C%20whether%20physical%20or%20legal%E2%80%9D.)

<sup>140</sup> The Arbitration and Conciliation Act, 1996, § 31

in the case of blockchain arbitral rulings, the awards are purely digital in nature, and the jurors' names remain anonymous throughout the process, making the awards unassignable by the jurors.<sup>141</sup>

Second, the location of the arbitration must be mentioned in the awards. There is no "seat" of arbitration because blockchain arbitration platforms are decentralized applications that exist fully online.<sup>142</sup>

Finally, the parties should be served with copies of the arbitrators' signed awards. The parties cannot be issued signed copies of the awards because the blockchain arbitration jurors cannot sign them due to their anonymity.<sup>143</sup>

As previously stated, direct blockchain arbitral awards are incompatible with the current legal framework. These discrepancies, however, can be overcome by using the hybrid paradigm used in the Kleros case while keeping the efficiency of blockchain arbitration. To enforce the hybrid arbitral awards, the pre-existing arbitral principles of Party autonomy and Ex Aequo et Bono which means "according to the right and good" might be invoked.

Section 19 of the Act states that it is up to the parties to select what procedure the arbitral tribunal would use.<sup>144</sup> Furthermore, the Supreme Court declared in *Bharat Aluminium Co v. Kaiser Aluminium Technical* that the parties are free to choose the law that will govern the substantive element of the dispute.<sup>145</sup> In fact, the parties can even choose to settle their dispute using a chess game or even a coin toss, with the arbitrator acting as a referee as long as it does not contravene with national policy. Hence, there is no reason for parties to not opt for blockchain arbitration to determine disputes with an arbitrator incorporating the results into an arbitral award.

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<sup>141</sup> CI Arb, International Arbitration Practice Guideline, Drafting Arbitral Awards Part I General

<sup>142</sup> Despoina Kottaridou, *The use of arbitration for the resolution of disputes arising from the use of blockchain technology*, February, 2023, <https://repository.ihu.edu.gr/xmlui/bitstream/handle/11544/30149/THE%20USE%20OF%20ARBITRATION%20FOR%20THE%20RESOLUTION%20OF%20DISPUTES%20ARISING%20FROM%20THE%20USE%20OF%20BLOCKCHAIN%20TECHNOLOGY.pdf?sequence=1>

<sup>143</sup> Thalia Kruger, 'Can Blockchain Arbitration become a proper 'International Arbitration'? Jurors vs. arbitrators', 22 May 2022, <https://conflictoflaws.net/2022/can-blockchain-arbitration-become-a-proper-international-arbitration-jurors-vs-arbitrators/>

<sup>144</sup> The Arbitration and Conciliation Act, 1996, § 19 of the Act

<sup>145</sup> *Bharat Aluminium Co. v. Kaiser Aluminium Technical Services Inc.*, (2012) 9 SCC 648

Ex ante et bono- The idea of ex aequo et bono gives arbitrators the authority to resolve a disagreement based on their good conscience and justice rather than the strict execution of legislative regulations.<sup>146</sup> Section 28(2) of the Act expressly recognises the same.<sup>147</sup> Blockchain arbitration methods are founded on moral and practical reasoning concepts. As a result, they act in conformity with the ex aequo et bono concept.<sup>148</sup>

## **FUTURE PROSPECTS AND RECOMMENDATIONS**

Blockchain can drive positive change in various sectors in India, a nation known for its tech prowess and diverse challenges. From revolutionizing financial systems to enhancing governance and healthcare, blockchain is emerging as a game-changer in India's journey toward a more transparent and digital future.<sup>149</sup>

The Indian government is looking forward to establishing a national blockchain framework that will help in transforming the future of as many as forty-four sectors including education, pharma, farming, energy, e-governance, and the likes.<sup>150</sup> The possibility of incorporating and adopting the blockchain technology in India is vast and the government is all set to ease the way for faster and smoother adoption of this new technology. In the coming days, blockchain technology is sure to become a gamechanger for India. It will help in revamping and removing all the major problems in most of the essential services provided by the government. As per predictions, blockchain technology is all set to become a massive \$176 billion business by 2050. So, in the future, the adoption of blockchain technology is all set to propel India to a whole new level altogether, helping it to rise considerably in ranks amongst the nations.<sup>151</sup>

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<sup>146</sup> Chetna Alagh, Justice And Fairness In Arbitration - An Overlooked Principle?, 11 Sept 2023, <https://www.livewlaw.in/articles/justice-and-fairness-in-arbitration-an-overlooked-principle-237432#:~:text=According%20to%20Black's%20Law%20Dictionary,applying%20rigorous%20terms%20of%20Iaw.>

<sup>147</sup> The Arbitration and Conciliation Act, 1996, § 28(2) of the Act

<sup>148</sup> Ex Aequo et Bono: An Overlooked and Undervalued Opportunity for International Commercial Arbitration, Kluwer Arbitration Blog, Nobumichi Teramura, November 18, 2018, <https://arbitrationblog.kluwerarbitration.com/2018/11/18/ex-aequo-et-bono-an-overlooked-and-undervalued-opportunity-for-international-commercial-arbitration/>

<sup>149</sup> Rahul Pagidipati, How blockchain is driving social impact and transforming India, June 4, 2023, <https://www.financialexpress.com/business/blockchain-how-blockchain-is-driving-social-impact-and-transforming-india-3113051/>

<sup>150</sup> 'The adoption of blockchain technology in India and its future', August 5 2022, <https://www.businesstoday.in/coindex-crypto-exchange/articles/story/the-adoption-of-blockchain-technology-in-india-and-its-future-342761-2022-08-05>

<sup>151</sup> 'The adoption of blockchain technology in India and its future', August 5 2022, <https://www.businesstoday.in/coindex-crypto-exchange/articles/story/the-adoption-of-blockchain-technology-in-india-and-its-future-342761-2022-08-05>

Post the COVID-19 pandemic, the Government and the judiciary have actively embraced technology tools in justice delivery processes. In the past few years, technology has played a crucial role in supporting the judicial functioning.<sup>152</sup> The Department Related Parliamentary Standing Committee on Personnel, Public Grievances, Law and Justice in its report on 'Functioning of the Virtual Courts/ Courts Proceedings through Video Conferencing' has recognised this contribution of technology. The report noted that virtualisation of proceedings will help overcome major challenges in justice delivery, such as distance, delays and cost. It went on to say that delivering justice through virtual courts will expand access to justice and result in a more inexpensive and user-friendly legal system. Recognising the benefits of digital justice systems, the Committee proposed expanding the concept of virtual courts to arbitration and conciliation in order to improve the efficiency and cost-effectiveness of justice delivery. While the research is about virtual courts rather than ODR, it reflects a shift in the judiciary's and government's attitude towards technology in dispute resolution processes. As a result, it lays the groundwork for future technical advancements in dispute resolution, such as ODR.

The Supreme Court, in *Shakti Bhog v Kola Shipping*<sup>153</sup>, and in *Trimex International v Vedanta Aluminium Ltd.*<sup>154</sup>, recognised the validity of use of technology in the arbitration process. The court also upheld that the validity of online arbitration agreements through emails, telegram or other means of telecommunication which provide the record of agreement.<sup>155</sup>

Hence, it can be reasonably concluded that despite the challenges which exist now, the government of India is open to innovations in Online Dispute Resolution moreover after the Supreme Court of India struck down the RBI Imposed ban on cryptocurrency in 2020<sup>156</sup> it has put a full stop to the scepticisms with regards to the legality of cryptocurrency made way for both cryptocurrency and blockchain technology to enter into new spheres.

Many other countries have already started full-fledged implementation of Online Dispute

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<sup>152</sup> 'The adoption of blockchain technology in India and its future', August 5 2022, <https://www.businesstoday.in/coindex-crypto-exchange/articles/story/the-adoption-of-blockchain-technology-in-india-and-its-future-342761-2022-08-05>

<sup>153</sup> *Shakti Bhog Foods Ltd. v. Kola Shipping Ltd.*, (2009) 2 SCC 134

<sup>154</sup> *Trimex International FZE Ltd. v. Vedanta Aluminium Ltd.*, (2010) 3 SCC 1

<sup>155</sup> Niti Aayog, DESIGNING THE FUTURE OF DISPUTE RESOLUTION:THE ODR POLICY FOR INDIA, <https://www.niti.gov.in/sites/default/files/2023-03/Designing-The-Future-of-Dispute-Resolution-The-ODR-Policy-Plan-for-India.pdf>

<sup>156</sup> *Internet and Mobile Association of India v. Reserve Bank of India*, 2018 SCC OnLine SC 3554

Resolution and enforcement of blockchain arbitral awards. Mexico has implemented Conciliant, a free ODR platform designed to resolve disputes between businesses and consumers by ordering contract compliance by merchants, but those seeking monetary damages must resort to lawsuits or other traditional claims processes.<sup>157</sup> With regard to online litigation, in 2021, China issued the Online Litigation Rules of the People's Courts, which cover the branches of criminal, civil, administrative and other laws to promote and regulate online trials, improve online trial rules, protect the legal rights of parties and other litigants, and ensure impartiality and efficiency in the adjudication of cases.<sup>158</sup> Articles 16, 17, 18 regulate the submission of evidence by parties to a dispute via blockchain, thereby legally confirming its applicability.<sup>159</sup> If India does not want to be left behind in the digitisation of judiciary it must overcome challenges which act as a barrier in implementation of blockchain arbitration and other forms of ODR.

According to the NITI Aayog report on "Designing the future of Dispute Resolution- The ODR Policy Plan for India" Following are some of the Structural Challenges to Online Dispute Resolution in India which might prevent Blockchain Technology from being effectively implemented in the judicial system.

### 1. Digital infrastructure

A pre-condition to ODR integration is robust technology infrastructure across the country. This includes access to computers, smart phones and medium to high bandwidth internet connection for at least the length of time it takes to conduct meaningful hearings. The lack of such requirements is likely to disadvantage those that have limited access to digital infrastructure. Currently, efforts to expand digital infrastructure have been taken under the National Digital Communication Policy, 2018 which aims to provide universal broadband connectivity and facilitate effective participation in global digital economy. Working towards this goal, in December 2019, the Central Government launched National Broadband Mission with an objective to provide broadband access to all villages

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<sup>157</sup> Zhuk, A 'Applying blockchain to the modern legal system: Kleros as a decentralised dispute resolution system', *International Cybersecurity Law Rev.* 4, 351–364 (2023)

<sup>158</sup> China: Supreme People's Court Issues Online Litigation Rules, Addressing Review of Blockchain Evidence, Library of Congress, <https://www.loc.gov/item/global-legal-monitor/2021-07-21/china-supreme-peoples-court-issues-online-litigation-rules-addressing-review-of-blockchain-evidence/>

<sup>159</sup> Zhuk, A 'Applying blockchain to the modern legal system: Kleros as a decentralised dispute resolution system', *International Cybersecurity Law Rev.* 4, 351–364 (2023)

by 2022.<sup>160</sup> Further details on the initiatives taken by the Government and the mechanism through which it can be achieved can be found in the Recommendations chapter of this report.

## 2. Digital literacy

Apart from digital infrastructure, a pre-requisite to ODR is widespread digital literacy. In India, this digital literacy often varies across age, ethnicity and geography. For instance, out of the 743.19 million internet subscribers in India, the internet rural penetration rate is only 32.24% (with 285.97 million subscribers) which is less than one third of the urban penetration rate of 99.12% (with 457.23 million subscribers).<sup>268</sup> Further, it is estimated that out of total 5,97,618 inhabited villages, including Gram Panchayats in the country (as per the Census 2011), only about 5,69,897 are covered by mobile services, leaving around 27,721 villages that are not covered by mobile services.<sup>161</sup> To enable the large-scale adoption of ODR it is necessary that such a digital divide be addressed. To achieve this, there is a need for programmes that focus on boosting internet accessibility in rural areas combined with dedicated initiatives to popularize basic skill sets required to access ODR services. Initiatives such as the Pradhan Mantri Gramin Digital Saksharta Abhiyaan (PMGDISHA) will go a long way to ensure access to justice in even the remotest and the most marginalized sections of the society.<sup>162</sup>

## 3. Divide in access to technology

In India, there exists a divide with respect to the access to technology across gender, geography, class and age. As per Internet India Report 2019, women constitute only 1/3rd of internet users in India. The situation is even worse in rural India where women constitute only 28 per cent of the internet users.<sup>163</sup> Due to the uneven distribution of

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<sup>160</sup> Government promises broadband access in all villages by 2022; launches National Broadband Mission, The Economic Times, Dec 17, 2019, <https://economictimes.indiatimes.com/tech/internet/government-promises-broadband-access-in-all-villages-by-2022-launches-national-broadband-mission/articleshow/72847719.cms>

<sup>161</sup> Rural India had 44% more internet users compared to urban markets: Nielsen report, The Economic Times, Mar 16, 2023, <https://economictimes.indiatimes.com/tech/technology/rural-india-pips-urban-india-in-internet-usage-with-44-more-users-report/articleshow/98704031.cms>

<sup>162</sup> Pradhan Mantri Gramin Digital Saksharta Abhiyaan, <https://www.pmgdisha.in/about-pmgdisha/>

<sup>163</sup> Women constitute one-third of Internet users in India: Study, The Indian Express, 5 Dec 2022, <https://indianexpress.com/article/india/women-constitute-one-third-of-internet-users-in-india-study-8305984/>

access to technology, only 27 percent of the rural population has access to the internet whereas in urban India, internet has percolated to 51 percent of the population.<sup>164</sup> Further, individuals above 40 years constitute only 15 percent of internet users in India. Such divide in accessing the internet might result in uneven access to ODR services, thereby exacerbating the divide that already exists in terms of access to justice through traditional courts.<sup>165</sup> It is essential that targeted attempts are made to bridge this divide to truly be able to deliver the benefits of ODR to all citizens.<sup>166</sup>

## SUGGESTIONS

1. The Parliament must enact a specific statute in order to regulate and govern the smart contracts and blockchain. This legislation should also cover the dispute resolution mechanism.
2. Block Chain Dispute Resolution Platforms must not maintain complete anonymity of the jurors and create some ways to provide information regarding the qualifications and knowledge of the jurors involved in arbitration.
3. The government can set up a separate arbitration entity to specifically deal with disputes arising out of smart contracts.
4. Although Blockchain technology is made in such a way that it is seemingly impossible to hack but if it is to deal with judicial processes the coding language should be programmed efficiently in order to prevent the implantation of bugs by hackers so as to ensure that justice is not interfered with.

Government should introduce compulsory training and certification programme for lawyers, jurors and the general public in order to equip them with the technical knowhow of blockchains so as to ensure efficiency.

Indian Government can provide incentives to private bodies for creating Kleros and Aragon like mechanisms on a national level which would be subject to Indian government regulations in order to relieve the burden on Arbitral tribunal and ensure speedy disposal of cases. As RBI will

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<sup>164</sup> Women constitute one-third of Internet users in India: Study, The Indian Express, 5 Dec 2022, <https://indianexpress.com/article/india/women-constitute-one-third-of-internet-users-in-india-study-8305984/>

<sup>165</sup> Women constitute one-third of Internet users in India: Study, The Indian Express, 5 Dec 2022, <https://indianexpress.com/article/india/women-constitute-one-third-of-internet-users-in-india-study-8305984/>

<sup>166</sup> Niti Aayog, DESIGNING THE FUTURE OF DISPUTE RESOLUTION:THE ODR POLICY FOR INDIA, <https://www.niti.gov.in/sites/default/files/2023-03/Designing-The-Future-of-Dispute-Resolution-The-ODR-Policy-Plan-for-India.pdf>

be launching Central Bank Digital Currency (CBDC) soon, the online platforms can use CBDC instead of cryptocurrency for its transactions, in order to eliminate the issues which might be caused by uncertainty in the value of cryptocurrency.

Additionally, government can create its own blockchain arbitration tribunal and compulsorily require individuals who want to participate as jurors to have certain qualifications and pre-requisite knowledge of the applicable laws, in addition to this, freedom to decide the language of the proceedings should be provided so as to assure that that this mechanism does not just benefit the English educated elitists. Although the features with regards to anonymity of jurors can be retained as it would make it next to impossible for powerful parties to influence the process by resorting to bribing or blackmailing the jurors.

In conclusion, Blockchain Arbitration could lead to tremendous progress in the Indian judicial system if the favourable aspects from other countries are implemented and the underwhelming aspects are minimized in order to ensure that Blockchain Arbitration is accessible to all sections of the society and is implemented efficiently.

